

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
WASHINGTON, D.C. 20554

In the Matter of:

Notice of Proposed Rule Making	)	
And Order	)	
	)	
Amendment of Part 90 of the	)	WT Docket No. 11-69
Commission's Rules to Permit	)	
Terrestrial Trunked Radio (TETRA)	)	
Technology	)	
	)	
Request by the TETRA Association for	)	ET Docket No. 09-234
Waiver of Sections 90.209, 90.210 and	)	
2.1043 of the Commission's Rules	)	

**COMMENTS OF THE PROJECT 25 TECHNOLOGY INTEREST GROUP**

The Project 25 Technology Interest Group (PTIG) is a 501(c) (6) corporation, an organization of public safety practitioners, manufacturers, and other emergency response professionals formed to promote the success of the Project 25 Standard and to educate the public on the benefits that the standard offers. The PTIG vision is that Project 25 (P25) technology achieves the fullest potential for interoperability. PTIG agrees with the FCC that interoperability is essential for serving the two-way radio communications needs of the public safety community.

The Project 25 Technology Interest Group respectfully submits the following comments in response to the Commission regarding the issues in this Notice of Proposed Rule Making. PTIG urges the Commission to move with caution and fully consider the negative impact of this proposal upon the licensed users in public safety.

## SUMMARY

PTIG questions the apparent premise that there is some over-riding benefit and enhanced capability derived by enabling the proposed additional technology. The FCC commentary within the notice is written with continued references to interference protection to other technologies. We would prefer that the FCC emphasize interference protection to licensed users of the spectrum, independently of technology utilized.

Our examination of the proposed rule making can find no derived benefit for improved user capabilities and no improvement in spectrum utilization. The foreseeable impact upon interoperability, an acknowledged fundamental attribute for public safety, is all negative, not beneficial.

## DISCUSSION

### **A. Interference Potential and Emission Mask Changes Proposed:**

It has been incumbent upon the manufacturers of authorized equipment, and the licensee/operators of the communications systems, to comply with the interference protection and emission masks with whatever their technology of choice. This has been applicable to analog and digital systems, to conventional and trunked systems, to FDMA and TDMA channel access systems. The adjustments proposed for the convenience of TETRA are not enhancing that mission of FCC compliance.

Allowing reduced performance from existing regulation for TETRA technology imposes a disadvantage upon two classes of the constituents now regulated under the FCC.

First is a disadvantage created to the equipments now authorized and type approved. The previously compliant equipments are now disadvantaged in cost to the new but reduced compliance entrants. The equipment currently available from the existing portfolio of authorized and compliant equipment was designed for compliance, and carries the technology burden of the original higher performance required. Allowing reduced performance authorizations, for the convenience of TETRA, creates an immediate disadvantage with no offsetting performance benefit to the users.

Second is the disadvantage created to the system operators and their system designs. Interference potential and system coverage analysis prescribed for public safety systems, if reduced performance is authorized, will now require a higher plateau of protection for worst case analysis of adjacent channel and emission protection.

The waivers authorized to TETRA in these proceedings are creating these increased risks, but will be limited to only the sub-set of waived applications. Although TETRA

represents that the interference potential is minimal, it still does exist. Enabling the reduced interference protection within the full range of proposed rules, for any equipment authorized, will result in future system designs being burdened with the need for added protections. Mitigating foreseeable worst case interference in early planning and original system designs will carry a continuing cost burden into the future. The result will require added costs and complexities into the future.

The conclusion recommended is NOT to allow reduced performance by the proposed rule changes. The existing regulations have an established foundation of best practices. Justification of reduced licensee protection for convenience to the TETRA Association is not a valid basis for regulatory change.

#### **B. ESMR Limitations and Other Technology Issues:**

The fundamental aspects of spectrum utilization, frequency coordination, tower height limitations, geographical proximity, etc are all variables impacted by one technology over another. However, compliance and safe use of the spectrum is assured by the measured RF performance of the authorized and licensed equipment. The existing rules and regulations must be adhered to and supported. These should be adhered to whether the equipment and licensed system operation is operating analog, digital, TETRA, Project 25, Cellular, iDEN, ESMR, etc. In the absence of any benefit to the users or to benefit spectrum use, there is no basis for changing the rules as proposed, merely for the convenience of an additional alternative technology.

Encountering unforeseen interference in existing as-built licensed systems has the potential for system disruption and user's loss of communication. Within the FCC footnotes is a reference to the mix of network architectures that have previously resulted in the interference scenario sometimes referred to as "near-far". These are now understood, but in hindsight, after difficult lessons learned from previous system experiences. Mitigation of unforeseen interference attributable to these proposed reduced performance allowances is likely to be extremely costly and difficult when encountered as "unintended consequences" in existing systems. We urge the FCC to move cautiously in this regard.

#### **C. TETRA Technology and Public Safety Pool Frequencies:**

Critical public safety scenarios for mutual support were envisioned when establishing the Public Safety Pool frequencies. The ease of interoperability during these critical scenarios is not benefited by the rule changes proposed. Adding alternatives is not a bad

thing, but enabling diverse non-compliant equipment alternatives merely for the convenience of one trade association does not serve the public safety need for enhanced interoperability, as cited by the FCC.

The FCC notes that licensees and system operators for public safety are adopting Phase I Project 25 Technology. This is because Phase I Project 25 complies with the existing and emerging FCC regulations. The licensees and users have chosen Phase I Project 25 because it facilitates backwards compatibility to legacy analog systems. There is also a clear path for Project 25 Phase II, utilizing TDMA, to also provide backwards compatibility to Project 25 Phase I.

Looking ahead, Project 25 Phase II utilizing TDMA has the ability to work within 12.5 kHz channel bandwidths, and in all the spectrum bands licensed under FCC regulation for public safety. Project 25 TDMA can provide 6.25 kHz voice spectral efficiency (same as TETRA) in all the FCC public safety bands.

The purposeful technology choices within Project 25 standards have all been made to assure compatible spectrum utilization of mixed mode systems (analog and digital as alternate modes) on the same channels and in adjacent channels. This assured capability from Project 25 technology is the result of planning for compliance to FCC regulation. We believe this is also a key factor why the FCC has, in the 700 MHz public safety band, required the Project 25 Common Air Interface for use with the 32 designated nationwide interoperability channels.

The TETRA association has not sought to comply with regulations, or serve the public safety needs, but rather to seek relief and convenience. The FCC proposed actions to reduce interference protections and change spectrum policy, seem to serve only the convenience of the TETRA association with no foundation for beneficial use of public safety licensed spectrum. The addition of TETRA technology adds no benefit and should NOT be permitted on Public Safety Pool frequencies.

#### **D. Alternative Technologies and Impact on Interoperability:**

Interoperability for public safety is an obvious and critical requirement. Interoperability has several facets that all have to fit together for success. Having one system equipped from multiple vendors is one. Coordinating frequencies and call protocols between cooperating jurisdictions is another. Mutual aid by visiting units with peer to peer communications, and unit to unit communications for short range on site communications without infrastructure dependency, are essential facets of interoperability. These operational scenarios are all considered necessary for interoperability.

#### Interoperability Across Multiple Vendors:

Multiple vendors sourcing into one system is a matter of fact both for Project 25 and TETRA. What is not being accomplished is equipment in compliance to FCC regulation available from the TETRA community of vendors. That fact IS being fulfilled by the Project 25 community of vendors. Achieving and maintaining interoperability among multiple vendors does not require the rule changes proposed to accommodate the TETRA technology.

#### Interoperability Across RF Bands:

Project 25 has an established set of users implementing it across multiple bands and geographies in FCC licensed operations for public safety. Also significant to public safety and critical communications planning is interoperability with U.S. Federal agencies. These may be sharing certain common RF bands or in disparate NTIA spectrum. Project 25 is established within many U.S. Federal agencies as their base line of communications for many civilian and law enforcement operations.

Interoperability across multiple RF bands licensed separately by neighboring but independent public safety agencies is a scenario desired and implemented today in several different ways. Gateways, infrastructure bridges, console audio patches, cross banded repeaters, are all among the arsenal of solutions available for these case by case and widely divergent situations. Interoperability for geographically separated systems and wide area regional systems is also being accomplished today with the same arsenal of solutions. These are often enhanced by information transport technology for wireline or point to point or internet protocols. Disparate systems can be linked, but it is a matter of cost and complexity.

#### Interoperability by Scalable Systems:

Project 25 has standardized interfaces that anticipate scalable system designs, ranging from simple local single site and up to wide area geographical multiple site systems. Project 25 has system scalability that includes fundamental unit to unit operation with no infrastructure dependency, and ranges in scale up to many subscribers roaming with affiliation across the systems. The flexibility of enabling small teams of independent radio users for an on-site localized scenario is a critical need for disaster recovery and public safety. This scenario is NOT enhanced with TETRA as an alternative technology. The TETRA defined operating modes do not support infrastructure independent operation. Adding another common air interface mode is not required when deploying systems with the foundation of the Project 25 standard.

#### Interoperability by Common Mode:

To whatever extent the disparate and distinct user organizations, as FCC licensees, reach mutual aid and sharing agreements to plan for interoperability, having a common mode of communication technology will always simplify and reduce costs. The legacy paradigm of analog FM on conventional channels is long past, but is still longed for by many. That is now displaced with complex signaling modes, trunking modes, and other dispatch protocols. All these afford improved spectrum utilization, but all have added complexity.

Project 25 has been structured to offer a common mode of communications technology that displaces the many anecdotal episodes of proprietary protocols blocking interoperability.

Interoperability Is Not Enhanced By TETRA:

Enabling TETRA as another disparate technology into the mix of available technologies does not enhance future interoperability, but complicates it, and thereby makes it less achievable, and more costly to sustain.

## **CONCLUSION**

The Project 25 Technology Interest Group urges the FCC to move with caution and consider the negative impact of this proposal upon the licensed users in public safety. The foreseeable impact upon interoperability, an acknowledged fundamental attribute for public safety, is all negative, not beneficial, adding complexity and interference risk with no benefit.

Our conclusion of the proposed rule making finds no derived benefit for improved user capabilities, no improvement in spectrum utilization, and we recommend the proposed rule changes should not be adopted.

Respectfully Submitted,

**PROJECT 25 TECHNOLOGY INTEREST GROUP**

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